

**Pluggable Bus Bar Connector with high current contacts**  
**Crown Clip Junior**

**1. SCOPE**

**1.1 Content**

This specification covers the requirements for application of the Tyco Electronics \* Pluggable Bus Bar Connector. These connectors provide a means of bringing high current levels up to 150A from Bus Bar conductors to printed circuit boards. The design features the ability to intercept Bus Bar position tolerances up to  $\pm 1$ mm.

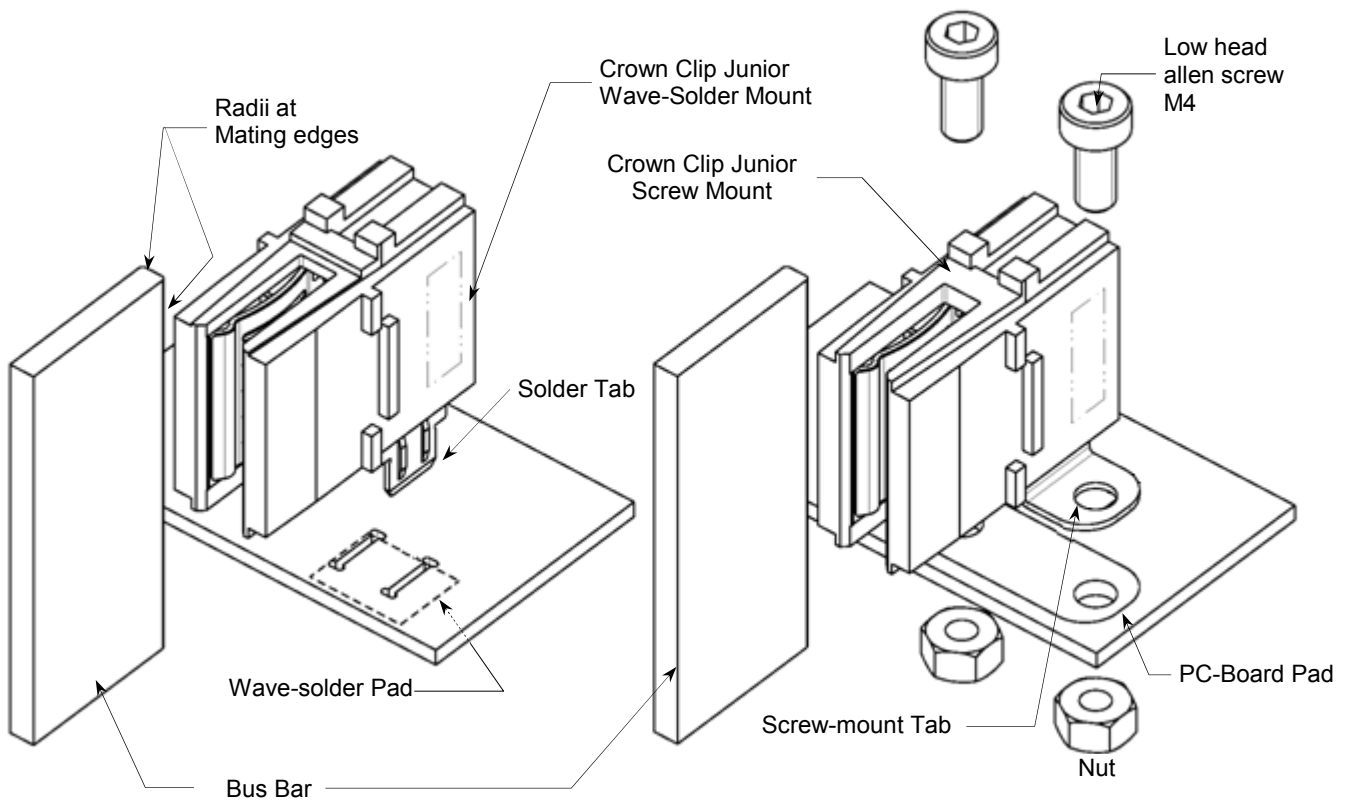
**2. REFERENCE DOCUMENTATION**

**2.1** For applicable performance requirements see Tyco Electronics Product Specification 108-19360.

**2.2** For configuration details see Tyco Electronics Customer Drawing of the specific part.

**3. NOMENCLATURE**

Below indicated terms are used in this document:



**Figure 1.**

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## 4. REQUIREMENTS

### 4.1 Connector Packaging, Handling and Storage

#### 4.1.1 Packaging

Connectors are packaged and shipped in boxed trays. They should be used on a first-in / first-out basis to prevent possible storage contamination and to insure maximum solderability.

#### 4.1.2 Storage

Packed connectors shall be stored according to "Storage Conditions of Tyco Electronics Products" specified in Packaging Standard 107-18064.

### 4.2 Connectors Mating Part (Bus Bar)

The Bus Bar Power Conductors (*Crown Clip Connectors Mating parts*), shall comply with the following requirements:

Recommended material:	Copper
Material Thickness:	3,0±0,1 mm.
Common stock width:	20,0 mm minimum
Smallest nominal pitch at contacting area:	Solder version: 25 mm Screw-mount version: 30mm
Pitch tolerance at connector area:	±1,0 mm ( <i>pitch tolerance includes twist and flatness</i> ) (see figure 2)
Surface roughness in contact area:	Ra 1,6 µm maximum
Plating in contact area:	3 µm min Tin over 1,25 µm min Nickel plating.
Radii at mating edges:	0,5 mm minimum.

### 4.3 Connector Assembly To PC-Board

#### PC-Board General

Selected path-width and thickness shall be designed in such a way that the Crown Clip Junior connector's maximum operation temperature is not exceeded during full current load.

**4.3.1 Solder Connectors**

**A. Solder pads**

Recommended PC-Board Wave-solder pad area is shown in figure 2. Configuration and position of slots for the solder tails are shown in figure 2 as well. The solder tails are press-fit mounted in the slots in order to prevent movement during the soldering process, and to provide extra mechanical stability to relief the solder connections during mate/unmate of the connectors with the bus bars.

**B. PC-Board mounting pitch**

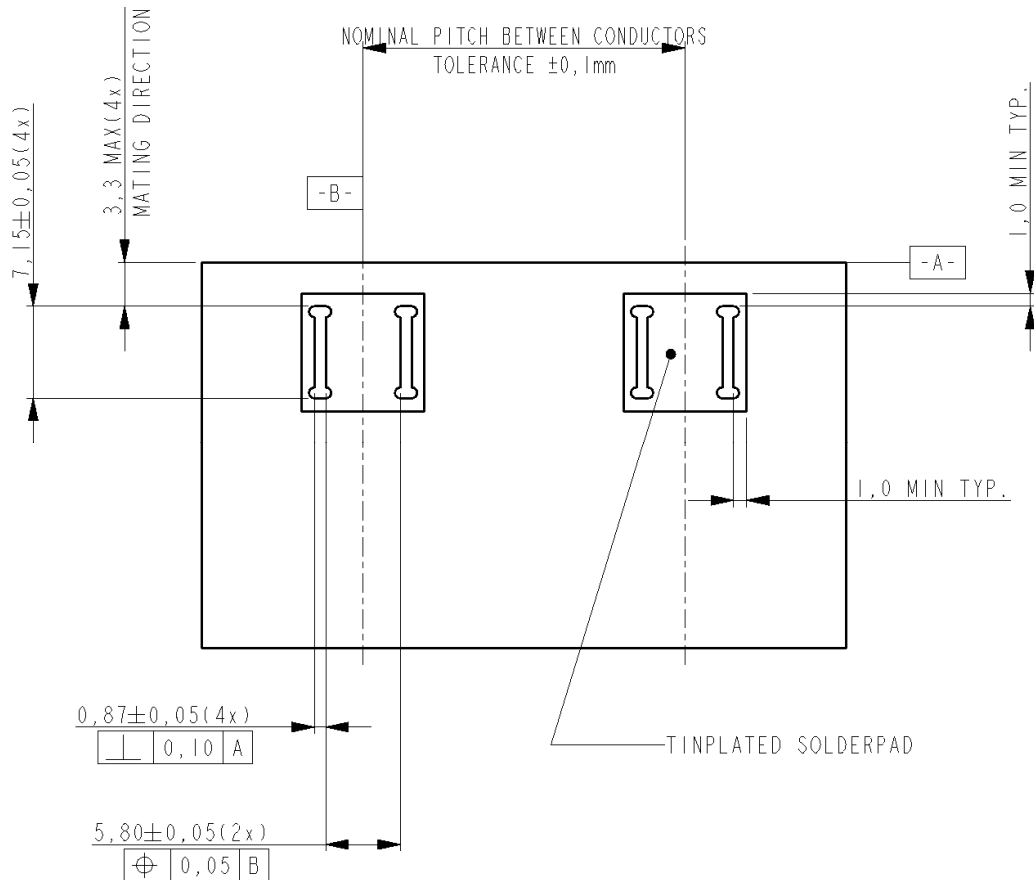
The minimum applicable connector PC-Board mounting pitch is 25mm ±0,1 mm.

**C. Board mounting**

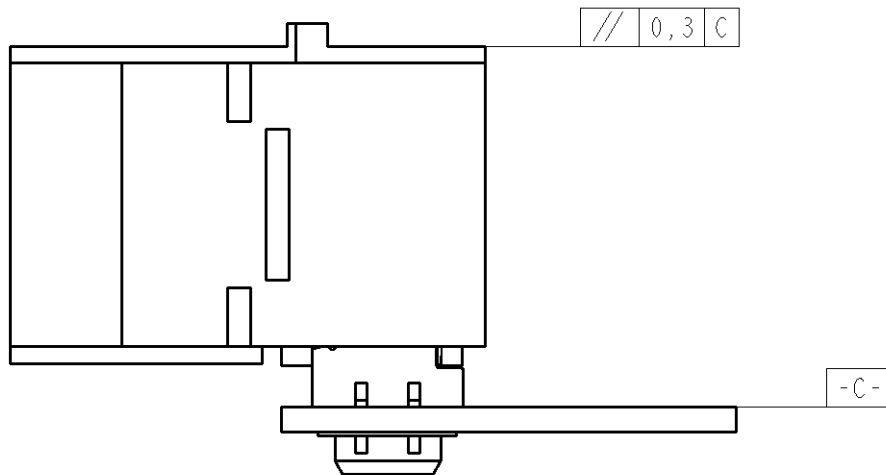
Solder contacts are designed for 2,0mm max PC-Board thickness. To prevent damage caused by excessive bending of the PC-Board, the PC-Board shall be supported during insertion of the solder contacts in related PC-Board slots. Contacts shall be inserted until their shoulders rest against the PC-Board surface (see figure 3). This position shall be maintained during the soldering process in order to relief the solder-joints from any connector mating-peak force and to comply to the PC-Board parallelism requirement (as indicated in figure 3).

**D. Solder process**

The Solder temperature and dip duration shall not exceed the values specified in Tyco Electronics specification 109-202 §4.3. Condition A.



**Figure 2.**



**Figure 3**

#### 4.3.2 Screw Mount Connectors

##### A. PC-Board Contact Pads

Recommended minimum PC-Board Contacting pad area and position of mounting holes are shown in figure 4.

##### B. PC-Board Mounting Pitch

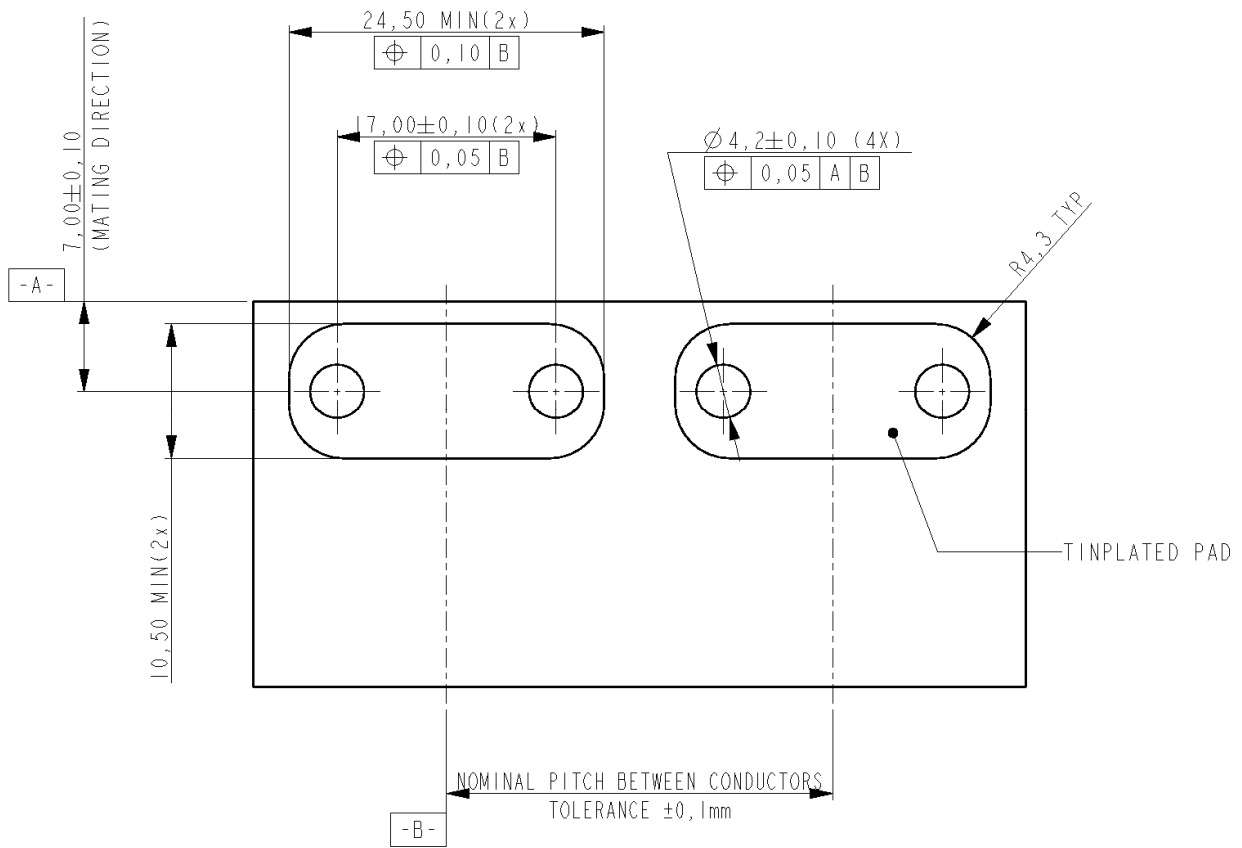
The minimum applicable connector PC-Board mounting pitch is 30mm  $\pm$ 0,1 mm.

##### C. PC-Board Screw Mounting

Limited space between hole centerline of mounting-tab and housing-wall, requires that screws are pre-assembled to the mounting tabs, prior to sliding the screws into corresponding PC-Board holes. Applicable screws are: M4 Hex Allen Screws.

Assure that contacting surfaces of Connector tabs and PC-Board Pads are clean prior to assembly, to assure optimal current transfer.

Screw-mounting shall be established with 2,0Nm min torque in order to perform max rated current (ref Surface-pressure/Contact-area). It is recommended to apply washers and spring-washers to prevent loosening of the screw-fixation during multiple mate/unmate operations.



**Figure 4.**

### 4.3.3 Connector Mating

The Crown Clip Junior Connector shall preferably fully mate the Bus Bar until it bottoms in housing. Minimum required mating depth to be 14,65mm to ensure a reliable connection (see figure 5).

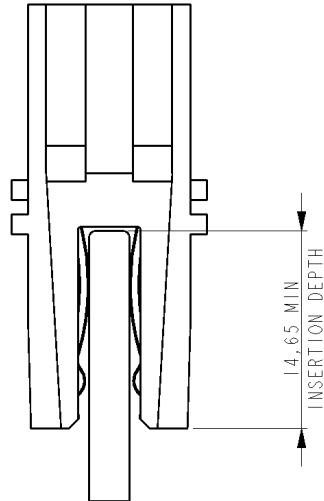


Figure 5.

### 4.3.4 Panel Mount Devices

Configurations of the panel mounting features at the housing are shown in figure 6.

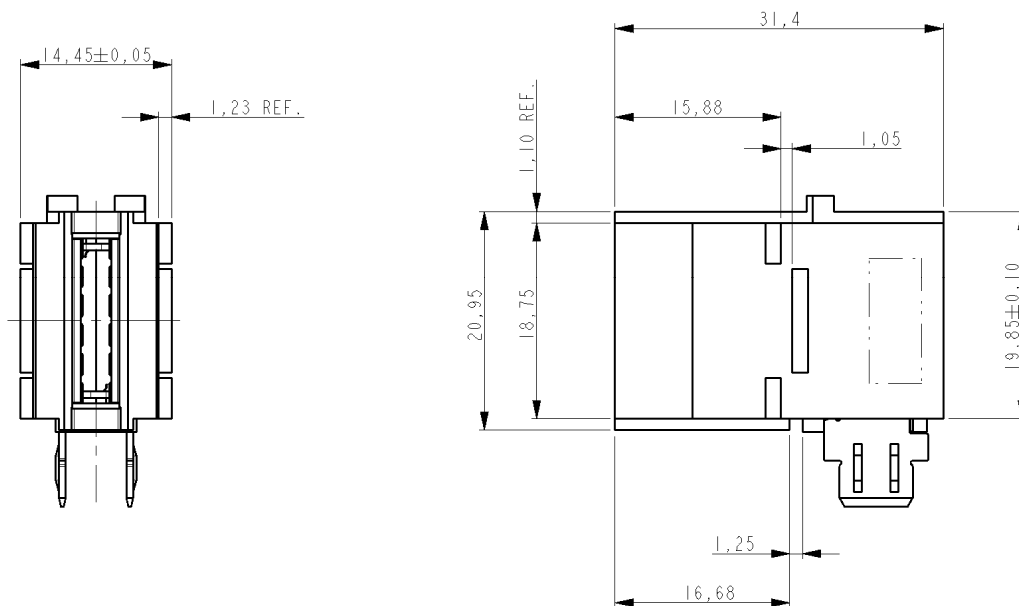
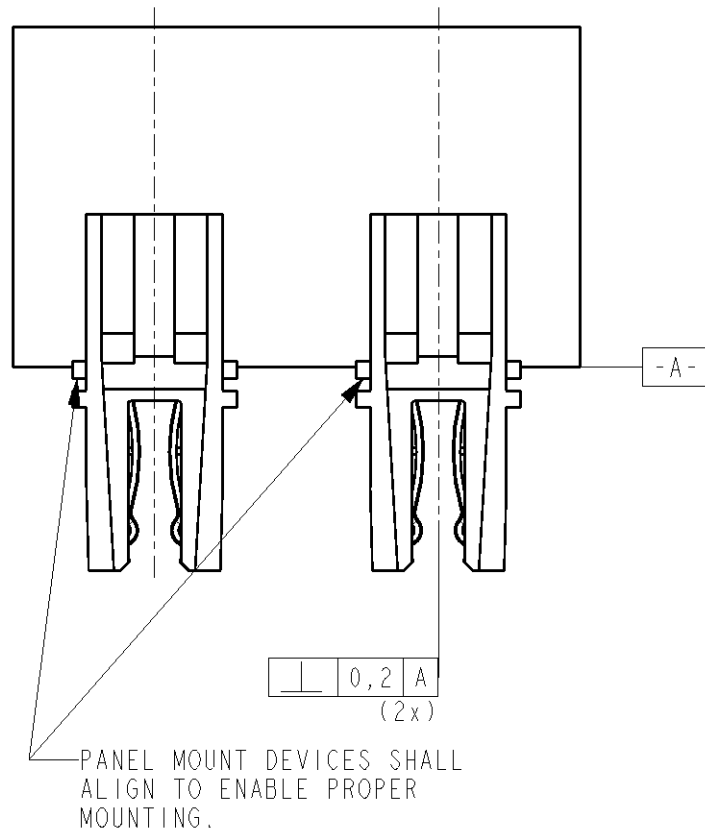


Figure 6.

**4.3.5 Connector Alignment**

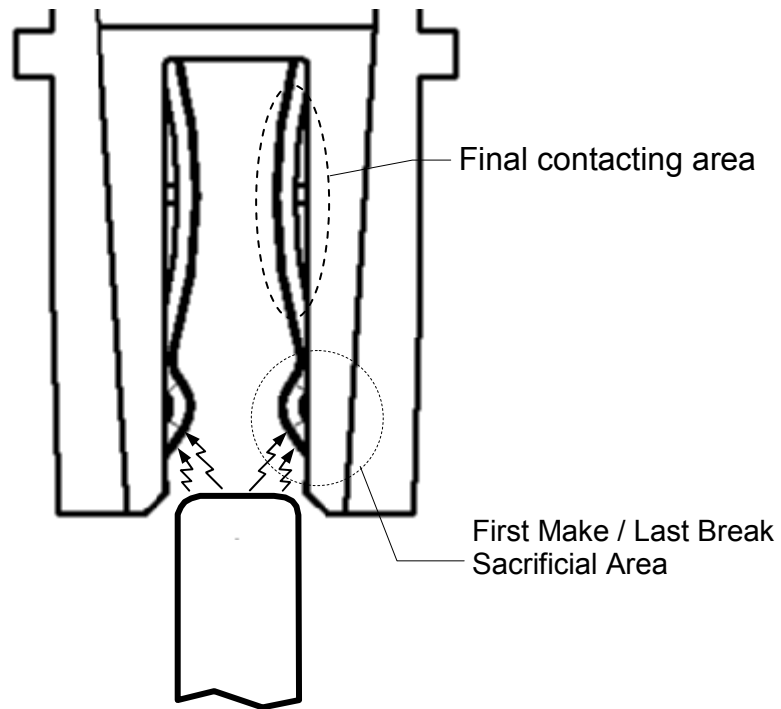
The Crown Clip Junior Connectors shall remain aligned after assembly and soldering, according to the perpendicularity requirements shown in figure 7. These requirements are valid for the solder and the screw-mount version.



**Figure 7.**

**4.4 Explanation of uncommon or unusual characteristics**

Spark spots at the contact entrance are not detrimental. This sacrificial area is designed as “first make / last break” –point, in order to prevent spark spots damage on the final contacting areas (situated deeper in the connector).



**Figure 8.**